

Challenging the Status Quo of Physician Attire in the Palliative Care Setting

AHSAN AZHAR¹,^{a,†} KIMBERSON TANCO,^{a,†} ALI HAIDER,^a MINJEONG PARK,^b DIANE LIU,^b JANET L. WILLIAMS,^a EDUARDO BRUERA^a

^aDepartment of Palliative Care, Rehabilitation, and Integrative Medicine and ^bDepartment of Biostatistics, The University of Texas MD Anderson Cancer Center, Houston, Texas, USA

[†]Contributed equally.

Disclosures of potential conflicts of interest may be found at the end of this article.

Key Words. Attire • Dress code • Palliative care • Compassion • Professionalism • Video vignette

ABSTRACT

Background, Aim, and Hypothesis. This randomized controlled trial aimed to compare the impact of a physician's attire on the perceptions of patients with cancer of compassion, professionalism, and physician preference. Our hypothesis was that patients would perceive the physician with formal attire as more compassionate than the physician wearing casual attire.

Materials and Methods. One hundred five adult follow-up patients with advanced cancer were randomized to watch two standardized, 3-minute video vignettes with the same script, depicting a routine physician-patient clinic encounter. Videos included a physician in formal attire with tie and buttoned-up white coat and casual attire without a tie or white coat. Actors, patients, and investigators were all blinded to the purpose and videos watched, respectively. After each video, patients completed validated questionnaires rating their perception of physician compassion,

professionalism, and their overall preference for the physician.

Results. There were no significant differences between formal and casual attire for compassion (median [interquartile range], 25 [10–31] vs. 20 [8–27]; $p = .31$) and professionalism (17 [13–21] vs. 18 [14–22]; $p = .42$). Thirty percent of patients preferred formal attire, 31% preferred casual attire, and 38% had no preference. Subgroup analysis did not show statistically significant differences among different cohorts of age, sex, marital status, and education level.

Conclusion. Doctors' attire did not affect the perceptions of patients with cancer of physician's level of compassion and professionalism, nor did it influence the patients' preference for their doctor or their trust and confidence in the doctor's ability to provide care. There is a need for more studies in this area of communications skills. *Clinical trial identification number.* NCT03168763 *The Oncologist* 2020;25:627–637

Implications for Practice: The significance of physician attire as a means of nonverbal communication has not been well characterized. It is an important element to consider, as patient preferences vary geographically, are influenced by cultural beliefs, and may vary based on particular care settings. Previous studies consisted of nonblinded surveys and found increasing confidence in physicians wearing a professional white coat. Unfortunately, there are no randomized controlled trials, to the authors' knowledge, to confirm the survey findings. In this randomized, blinded clinical trial the researchers found that physician's attire did not affect patients' perception of the physician's level of compassion and professionalism. Attire also did not influence the patients' preferences for their doctor or their trust and confidence in the doctor's ability to provide care.

INTRODUCTION

The tone of the physician-patient encounter is set the moment the physician enters the room. First impressions include both verbal and nonverbal cues, and in addition to body language, the physician's attire may be one of the

earliest aspects the patient notices. The communication process between a patient and physician has been described to include four integral components: the physician, the patient, the content of communication, and the

Correspondence: Eduardo Bruera, M.D., Department of Palliative Care, Rehabilitation and Integrative Medicine, The University of Texas MD Anderson Cancer Center, Unit 1414, 1515 Holcombe Blvd., Houston, Texas 77030, USA. Telephone: 713-792-6084; e-mail: ebruera@mdanderson.org Received July 25, 2019; accepted for publication January 7, 2020; published Online First on February 19, 2020. <http://dx.doi.org/10.1634/theoncologist.2019-0568>

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environment [1]. The significance of physician attire as a means of nonverbal communication cue has been well characterized [2–13]. Attire may even be an increasingly important element to consider, given the increasing influence of social media and the Internet [2]. Social media may have increasing influence on the way people make choices [14–16]. Web sites share ideas and thoughts, including but not limited to what the physicians wear in their Web site picture, which may influence patient preferences [17, 18]. Previous studies have indicated that patient preferences regarding physician attire vary geographically, are influenced by cultural beliefs, and may vary based on particular care settings [9]. In nonblinded surveys, patients expressed preference for formal attire including a lab coat [7, 9, 19]. Unfortunately, there are no randomized controlled trials to confirm the survey findings. The few studies that have been conducted have included designs in which patients were not blinded, used pictures of health professionals in different attire and the same or different doctors in different attire, and rated the doctors involved in direct care [2, 3, 7, 9, 11, 19–28], which raises concerns for bias.

In our opinion, there is a particular gap in knowledge regarding the preferences of patients with advanced cancer for physician attire in the palliative care setting. Hence, we conducted this study to address this knowledge gap. In the past, we have successfully used video interventions with blinding to determine the impacts of physician posture [29], message content [1, 30], and the effects of computer and electronic health record use in the clinic room [31] on patient perceptions regarding physicians' level of compassion and professionalism, along with patient preferences using validated outcome measurement tools. Importantly, the video vignettes presented to patients were carefully controlled to ensure that the scripts and actors were consistent between videos with the exception of the parameter to be tested. Our past success with this methodology suggested that video vignettes presented to patients would be an ideal way to investigate attire preferences in a controlled manner.

In the current study we utilized the same methodology and aimed to determine the impact of physician attire on patients' perceptions of physician compassion and professionalism, as well as patient preferences, using a double-blind randomized controlled trial design. Based on the limited previous literature available and the conventional opinions of health care providers, we hypothesized that patients would perceive the physician with formal attire (tie and buttoned-up white coat) as more compassionate and professional over the physician wearing casual attire (plain shirt, no tie, and no white coat).

MATERIALS AND METHODS

Upon approval from the institutional review board, 154 adult, English-speaking patients with advanced (locally advanced, metastatic, and/or recurrent) cancer presenting for follow-up to the outpatient supportive care center at The University of Texas MD Anderson Cancer Center were approached for consent to participate in this randomized controlled trial (RCT) from October 2017 to April 2018 (the CONSORT diagram is shown in Fig. 1). Patients with altered cognition (as assessed routinely in the Supportive Care

Clinic using the Memorial Delirium Assessment Scale [MDAS] [32], with a score of $\geq 7/30$), those with severe psychiatric disorder or a condition that would significantly interfere with study participation as determined from review of the chart, and patients with hearing and/or visual impairments were not eligible to participate.

Patient demographics were collected from the medical records, including age, sex, ethnicity, race, marital status, level of education, religion, and type and stage of cancer. Patients were asked to complete validated questionnaires for baseline assessment, including symptom assessment using the modified Edmonton Symptom Assessment Scale (ESAS) [33–36], the Trust in Medical Profession questionnaire [37], disease acceptance using the five-item Peace, Equanimity, and Acceptance in the Cancer Experience (PEACE) subscale of the 12-question Current Health and Disease Acceptance tool [1, 38], the Hospital Anxiety Depression Scale (HADS) [39], and the Herth Hope Index [40, 41].

Measurement Tools

Memorial Delirium Assessment Scale

The MDAS [32, 42] is highly correlated with other measures of delirium and cognitive impairment [43–45]. A score of 7/30 on the MDAS yields the highest sensitivity (98%) and specificity (97%) for delirium diagnosis.

Edmonton System Assessment Scale

The ESAS [33–36] is a validated tool for regular assessment of symptom intensity in the palliative care setting. Patients are asked to grade severity of their symptoms in the last 24 hours from 0 (no symptom) to 10 (worst symptom). The ESAS has high test-retest reliability (>0.8) and has been validated in many clinical settings, including the population of patients with cancer. We use the updated version, ESAS-FS, which includes financial distress and spiritual pain as the two new variables added to the original ESAS and measured in a way similar to other ESAS dimensions on the 11-point scale from 0 to 10 [34, 35].

Trust in the Medical Profession

The Trust in the Medical Profession questionnaire [37] is an abbreviated five-item scale coded from 1 (strongly agree) to 5 (strongly disagree) that is well validated to assess a patient's trust in the medical profession (test-retest reliability = 0.77). Patients were also asked to rate their overall degree of trust in the medical profession on an 11-point Likert scale from 0 (best possible) to 10 (worst possible).

Assessment of Current Health Status and Disease Acceptance (Peace, Equanimity, and Acceptance in Cancer Experience Scale)

This validated questionnaire asks patients to describe their understanding of current health status. We used the PEACE subscale [38], which includes only 5 of the 12 questions. The subscale is a valid and reliable measure of peaceful acceptance of illness (four-item scale from "not at all" to a "large extent"). We also asked the patients to rate their overall degree of acceptance of disease on an 11-point Likert scale from 0 (best possible) to 10 (worst possible).

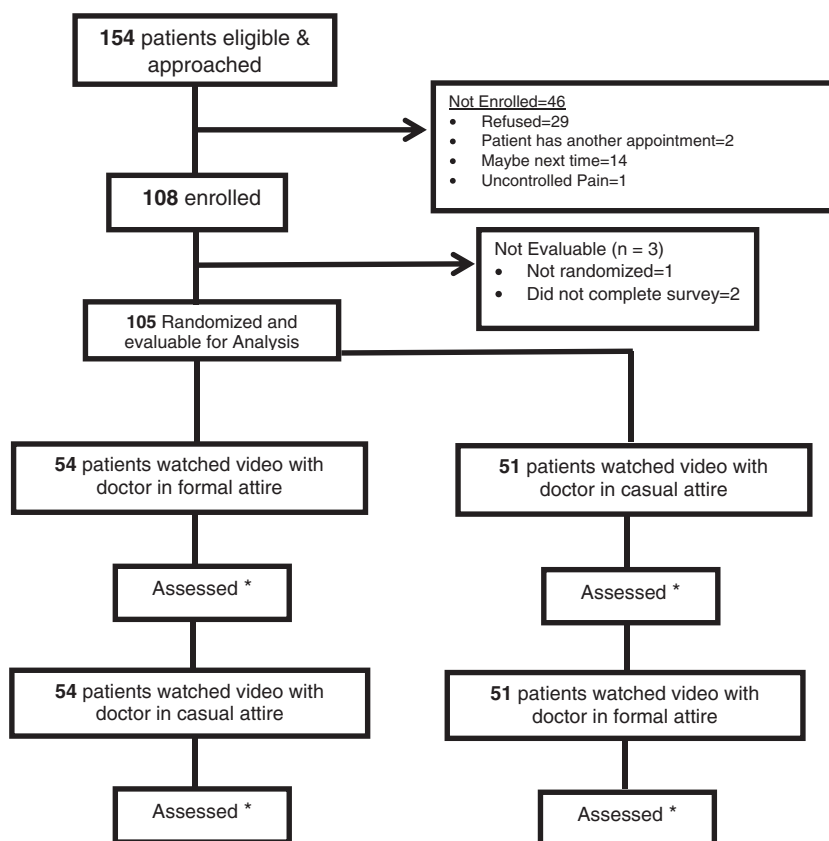


Figure 1. CONSORT diagram. “Assessed” indicates that after watching the videos, patients were assessed for their perceptions of physician’s level of compassion, professionalism, and preference.

Hospital Anxiety and Depression Scale

The HADS [39] is a 14-question self-assessment scale that asks patients to mark the answer that comes closest to how they have been feeling in the past week. It is a reliable instrument for detecting states of depression and anxiety in the setting of an outpatient clinic. Each item is scored from 0 to 3, which gives a score between 0 and 21 for either the depression subscale or anxiety subscale. The cutoff point has been established as 8/21 for anxiety or depression, which gives a specificity of 0.78 and a sensitivity of 0.9 for anxiety and a specificity of 0.79 and a sensitivity of 0.83 for depression. Scores between 8 and 10 indicate mild depression, scores between 11 and 14 indicate moderate depression, and scores between 15 and 21 indicate severe depression. Similar scores are considered for the anxiety subscale.

Patient’s Level of Hopefulness (Herth Hope Index)

The Herth Hope Index [40] is a 12-item abbreviated instrument with a four-item scale from 1 (strongly disagree) to 4 (strongly agree). The index has an alpha coefficient of 0.97 and a 2-week test-retest reliability of 0.91. We also asked the patients to rate their overall degree of hopefulness on an 11-point Likert scale from 0 (best possible) to 10 (worst possible).

Patient Assessment of Physician Compassion

The Patient Assessment of Physician Compassion [46] is a validated five-item tool consisting of a numerical rating

scale from 0 to 10 that assesses five dimensions: warm to cold, pleasant to unpleasant, compassionate to distant, sensitive to insensitive, and caring to uncaring. The sum of the five scales gave a final score representing physician’s compassion on a scale of 0 to 50 [30, 47].

Patient Assessment of Physician Professionalism

The Patient Assessment of Physician Professionalism [48] is a validated tool, adapted from the general Medical Council Patient Questionnaire, to assess professional performance of a physician. Specifically, the tool assesses politeness, listening, explaining the condition and treatment to the patient, and the patient’s involvement in treatment decisions. It also includes questions about trustworthiness toward a doctor and patient’s confidence in the doctor’s ability to provide care (answered as yes or no). The patient rates the first four items from 1 (poor) to 5 (very good) and from 1 (strongly disagree) to 5 (strongly agree) for trustworthiness. The sum of these five items will give a final score representing the physician’s level of professionalism on a scale of 5 to 25 [1, 31].

Intervention

The patients were randomized to watch two standardized, 3-minute video vignettes with the same script, depicting a routine physician-patient clinic encounter. In one video, the physician was wearing formal attire, including a tie and a buttoned-up white coat; in the other video, the physician

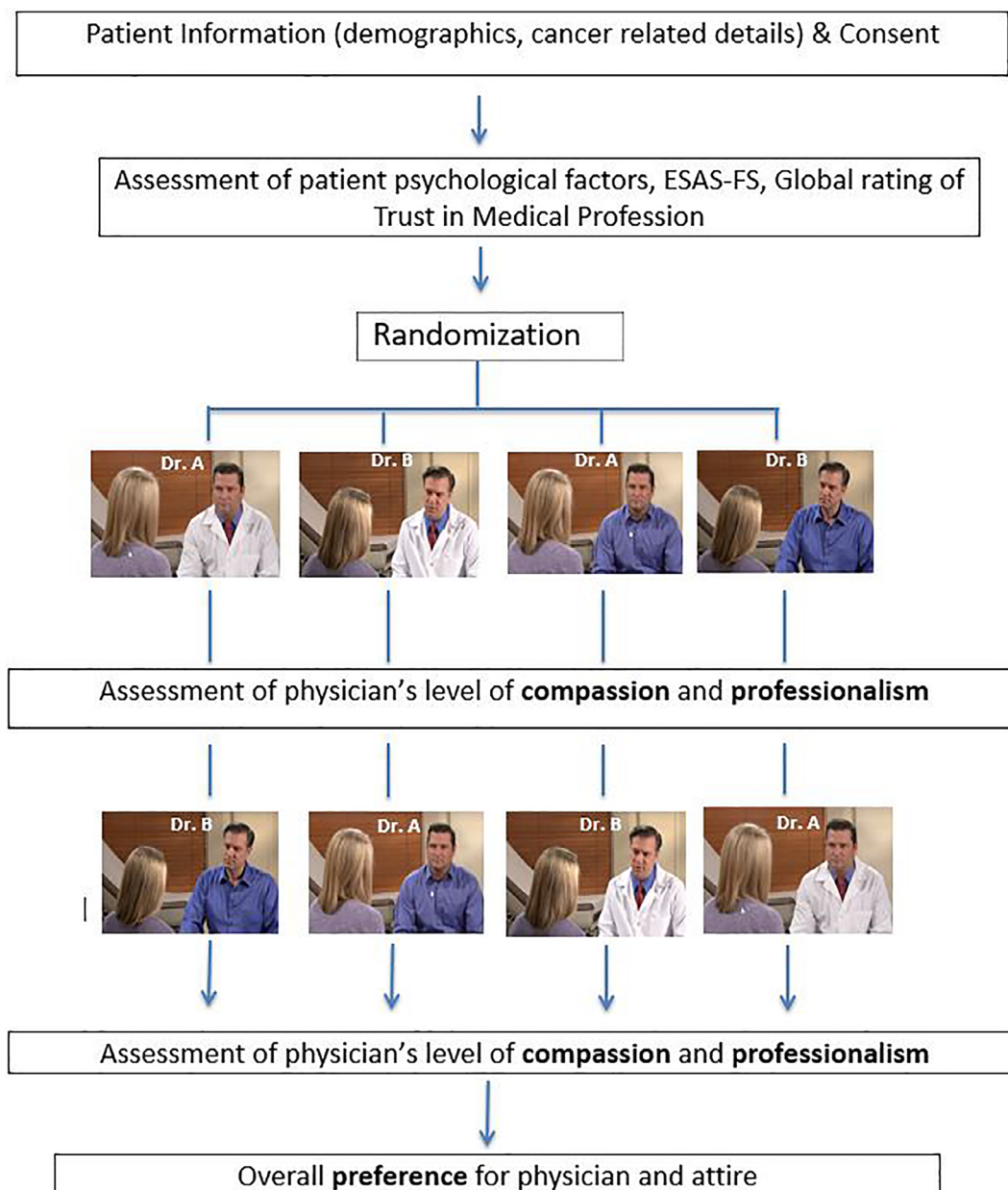


Figure 2. Study design.

Abbreviation: ESAS-FS, Edmonton Symptom Assessment Scale.

was in casual attire without a tie or a white coat. All actors and patients were blinded to the purpose of the study, and investigators were blinded to the videos watched by the patients. Figure 2 shows a schematic of the study design. The script is provided in supplemental online Appendix 2.

The Video

Video was used as a means of delivering standardized information to patients. Each video was approximately 3 minutes long and showed a physician talking to a patient as in a routine clinic encounter, delivering information based on the standardized script. Both videos had a similar setup and used the same script. The only difference was the physician (actor portraying doctor A or B) and the type of attire the physician was wearing: formal (with tie and white coat) or

casual (without tie and white coat). Videos were made in partnership with The University of Texas television team to select professional actors, portraying a standardized patient and physician clinic encounter. Rehearsals were conducted before final filming and development of the video. These scripted video vignettes, used to deliver the intervention, complied with recommendations by Hillen and van Vliet [49, 50]. This strategy has been used previously in other peer-reviewed publications [1, 29, 31, 47, 51] and was chosen to reflect a typical outpatient consultation scenario at the cancer center.

The Physician

The professional actors selected to play the role of the physician were based on similar physical characteristics in

terms of sex, age, and race (male, middle-aged, white) to act in the same way in each video, with the same body language while delivering the same message, leading to four different videos with two physicians in two different types of attire.

The Patient

The role of the patient was portrayed by the same professional actress in all videos: a white woman, approximately 50 to 60 years old.

The Script

The same script was used for both the attire types. It included a discussion of the patient's symptoms of fatigue and nausea after chemotherapy and a mention of disease progression on recent staging scans. It was developed by a team of clinicians, including the investigators and collaborators, to depict a common scenario in an oncology-based clinic at a tertiary care cancer center. The script was designed to reflect an emotionally neutral physician, not too likeable or unlikeable, who delivered the same message in a similar setup, so we could better assess the influence of the physician's attire on the patient's perceptions about the physician. Both male actors were given the same script and hence delivered the same number of empathic statements, hand gestures, facial expressions, and voice differences.

An independent review of the videos was conducted by the investigators and collaborators, first without sound, to ensure that the physicians' expression and body posture when delivering the message remained consistent. Then the video was reviewed by listening only to the audio to assess for any possible voice bias.

The videos were randomly assigned to the patient after obtaining written informed consent and completing the prevideo surveys. Randomization was conducted using Clinical Oncology Research System (CORE). Each patient was asked to watch two videos in the crossover design with a different physician in a different attire based on the initial randomization.

After viewing each video, patients completed validated questionnaires rating their perception of physician compassion (0 = best, 50 = worst) [1, 30, 31, 46], which was the primary outcome of the study. The secondary outcome was the patient's rating of their perception of physician professionalism (5 = poor, 25 = very good). The secondary outcome measures also included the patient's preference for the physician [1, 18], and in the end, the patients were asked questions regarding their general preference for physician's attire using a questionnaire designed by the investigators (supplemental online Appendix 1).

Considering an early termination/dropout rate of 5% or less, we aimed to reach 100 patients who could finish at least the first video and finish the questionnaire for physicians' compassion (the primary objective). Analysis was based on perception ratings after watching the first video. On average, it took less than 30 minutes to watch the videos and complete all of the questionnaires.

Distress Plan

The palliative care physician and/or the palliative care counselor were available in the clinic to assess and address any issue(s) and in case any patient reported distress while participating in the study.

Statistical Considerations

With a total of 100 evaluable participants (i.e., 100 patients who finished at least the first video and finished the survey for physicians' compassion), 50 watching the video with physicians in formal attire and 50 watching the video with physicians in casual attire, we calculated having an 80% power to detect an effect size of 0.566 on physician's compassion after the first video using a two-sample *t* test with a two-sided significance level of 5%. Assuming a standard deviation of 10, this effect size corresponds to a difference in average compassion score of 5.66 between the two groups. The randomized assignment was obtained via the Clinical Oncology Research System (CORE).

Analysis Plan

Standard descriptive statistics including median, interquartile range, frequency, and percentage were summarized for variables of interest such as patients' age, gender, ethnicity, race, marital status, education level, religion, cancer diagnosis, current health status, HADS, trust in medical profession, PEACE at baseline, and physician's compassion, professionalism, trust, and confidence scores after watching the first video. Wilcoxon rank-sum test was used to compare continuous variables of the patient's characteristics including physician's compassion, professionalism, trust, and confidence scores between formal attire versus casual attire groups at the end of first video. The chi-squared test or Fisher's exact test, whichever was appropriate, was used to compare categorical variables of patients' characteristics between formal attire versus casual attire groups at the end of watching the first video and between agree or strongly agree versus the rest of the questionnaire asking about preference of formal attire after watching the second video. A linear mixed effect model was fitted for the outcome variable to assess if there is any video effect, after taking into account of the "sequence" and "period" effect, in this crossover design.

Informed Consent, Data Confidentiality, and Data Protection

Because of the extremely low risk of adverse events, a waiver for Data and Safety Monitoring Board (DSMB) review was obtained. Written consent was obtained from all patients for enrollment according to the MD Anderson Policies and Standards. All electronic records were stored on password-protected institution computers behind the institution firewall. Any paper records were classified and stored in locked files inside a locked office. Only MD Anderson Cancer Center personnel trained in maintaining confidentiality, the principal investigators, and coinvestigators had access to study records. Study data were collected and managed using Research Electronic Data Capture (REDCap) tools hosted at MD Anderson [52, 53]. All protected health information was removed from the data when they were exported from REDCap for analysis. All dates for a given patient were shifted by

Table 1. Patient demographics, baseline characteristics and compassion, professionalism, trust, and confidence scores after watching the first video

Variable	Total (n = 105), n (%)	Formal (n = 54), n (%)	Casual (n = 51), n (%)	p value
Age, median (IQR)	59 (50–66)	60 (50–69)	59 (49–65)	.67
Sex: female	67 (64)	35 (65)	32 (63)	.82
Ethnicity				
Hispanic or Latino	9 (9)	5 (9)	4 (8)	.99
Not Hispanic or Latino	96 (91)	49 (91)	47 (92)	
Race				
White	77 (73)	38 (70)	39 (76)	.63
Others	28 (27)	16 (30)	12 (24)	
Marital status: married	66 (63)	37 (68)	29 (57)	.30
Education				
Below college	58 (55)	30 (55)	28 (55)	.99
College and above	47 (45)	24 (45)	23 (45)	
Religion				
Catholic	15 (14)	8 (15)	7 (14)	.24
Christian/Protestant	69 (66)	39 (72)	30 (59)	
Jewish	1 (1)	0	1 (2)	
Other/not specified	20 (19)	7 (13)	13 (25)	
Cancer diagnosis				
Breast	27 (26)	15 (28)	12 (24)	
Gastrointestinal	19 (18)	9 (17)	10 (20)	
Genitourinary	10 (9)	4 (7)	6 (12)	
Gynecological	9 (8)	6 (11)	3 (6)	
Head and neck	4 (4)	3 (6)	1 (2)	
Leukemia	3 (3)	1 (2)	2 (4)	
Lung	16 (15)	5 (9)	11 (22)	
Lymphoma	2 (2)	1 (2)	1 (2)	
Myeloma	1 (1)	1 (2)	0	
Neuroendocrine	2 (2)	1 (2)	1 (1)	
Sarcoma	5 (5)	4 (7)	1 (1)	
Skin	7 (6)	4 (7)	3 (6)	
Overall trust in medical profession	12 (9–15)	12 (8–15)	12 (9–15)	.82
Current health status ^a	1 (1–2)	1 (1–2)	1 (1–2)	.89
PEACE ^b	17.5 (16–20)	18 (16–20)	17 (15–20)	.47
HADS anxiety ^b	7 (4–9)	7 (5–9)	6.5 (3–9)	.83
HADS depression ^b	5 (3–8)	5 (2–7)	5 (3–8)	.79
HADS total ^b	12 (7–17)	12 (6–17)	11 (7–17)	.96
Herth Hope Index ^b	39 (36–44)	39 (36–44)	40 (36–44)	.78
Compassion score ^{b,c}	22 (10,30)	25 (10–31)	20 (8–27)	.31
Professionalism score ^{b,d}	17 (14–22)	17 (13–21)	18 (14–22)	.42
“I am confident that this doctor is trustworthy” ^{b,e}	4 (3–4)	3 (3–4)	4 (3–4)	.31
“I am confident about this doctor’s ability to provide care,” yes, n (%)	73 (70%)	34 (63%)	39 (78%)	.09

^aThis item used the following scale: 0, relatively healthy; 1, serious but not terminally ill; 2, serious and terminally ill.^bValues in median (IQR).^cThis item used the following scale: 0, best; 50, worst.^dThis item used the following scale: 5, poor; 25, very good.^eThis item was scored from 1 (strongly disagree) to 5 (strongly agree).

Abbreviations: HADS, Hospital Anxiety Depression Scale; IQR, interquartile range; PEACE, Peace, Equanimity, and Acceptance in the Cancer Experience.

Table 2. General preference for physicians' attire (unblinded questionnaire; $n = 105$)

No.	Survey questions (supplemental online Appendix 1)	Median (IQR) ^a
1.	A doctor dressed formally (i.e., with tie and white coat) makes me feel comfortable	3 (3–4)
2.	It would be easier to communicate with a doctor dressed in formal attire (i.e., with tie and white coat)	3 (3–4)
3.	A doctor dressed casually (i.e., without tie and white coat) makes me feel comfortable	3 (3–4)
4.	I prefer the doctor to wear a white coat.	3 (3–4)
5.	It would be easier to communicate with a doctor dressed in casual attire (i.e., without tie and white coat)	3 (2–3)
6.	A doctor dressed in casual attire (i.e., without tie and white coat) makes me feel comfortable when talking about emotional and personal topics	3 (3–4)
7.	A doctor dressed in formal attire (i.e., with tie and white coat) impresses me as someone with more knowledge.	3 (2–4)
8.	A doctor dressed in formal attire (i.e., with tie and white coat) impresses me as someone being more professional.	3 (3–4)
9.	A doctor dressed in formal attire (i.e., with tie and white coat) makes me feel comfortable when talking about emotional and personal topics	3 (2–3)
10.	A doctor dressed in formal attire (i.e., with tie and white coat) impresses me as someone who is more caring.	3 (2–3)
11.	A doctor dressed in casual attire (i.e., without tie and white coat) impresses me as someone with more knowledge.	3 (2–3)
12.	A doctor dressed in casual attire (i.e., without tie and white coat) impresses me as someone being more professional.	3 (2–3)
13.	A doctor dressed in formal attire (i.e., with tie and white coat) impresses me as someone more trustworthy.	3 (2–3)
14.	A doctor dressed in casual attire (i.e., without tie and white coat) impresses me as someone who is more caring.	3 (2–3)
15.	A doctor dressed in casual attire (i.e., without tie and white coat) impresses me as someone more trustworthy.	3 (2–3)

^aScored from 1 (strongly disagree) to 5 (strongly agree).

Abbreviation: IQR, interquartile range.

a randomly generated number between 0 and 364, thus preserving the distance between dates. Dates for each patient were shifted by a different randomly generated number. After publication, study data will be archived in REDCap.

RESULTS

We screened 809 patients with advanced cancer presenting for follow-up to our outpatient Supportive Care Center between October 2017 and April 2018. Of the 154 patients that were eligible and approached to participate in the study, 108 patients (70%) consented to be enrolled. Data from 105 of 108 patients were evaluable for analysis. Fifty-four patients were randomized to watch the video intervention in the formal attire group, and fifty-one patients watched the video in the casual attire group (the CONSORT diagram is shown in Fig. 1).

Table 1 shows the characteristics and demographics of the evaluable patients. Median age (interquartile range [IQR]) was 59 (50, 66) years. The majority of the patients were female (64%), non-Hispanic (91%), white (73%), and married (63%). There was no statistically significant difference in religious preferences among the two groups. In the preintervention screening there was no difference seen in patients in both groups regarding overall trust in the medical profession, understanding regarding current health

status, PEACE score, HADS, or hopefulness. There was no statistically significant difference in ESAS-FS scores between the two groups (formal and casual attire) except for shortness of breath (median [IQR], 0 [0–3] vs. 2 [0–4], respectively; $p = .035$).

No significant differences were seen between the formal and casual attire groups, after watching the first video, for compassion (median [IQR], 25 [10–31] vs. 20 [8–27], respectively; $p = .31$) and professionalism (17 [13–21] vs. 18 [14–22], respectively; $p = .42$).

The difference was also not statistically significant after watching the second video. Crossover analysis comparing the effect of physician attire on patients' perception of physician's compassion and professionalism was also not statistically difference ($p = .014$ and $p = .43$, respectively). The linear mixed effect model evaluating the effect of physicians' attire (video effect) on physicians' compassion and professionalism, after taking into account the "sequence" and "period" effect, indicate that there was no significant video effect on patients' perception of either physician's compassion or professionalism.

Physician's attire did not influence the patient's perception regarding doctor's trustworthiness ($p = .31$) and ability to provide care ($p = .09$).

Overall, while patients were still blinded, 30% of patients preferred the physician in formal attire, 31% of

Table 3. Subgroup analysis of unblinded questionnaire, questions 1 and 8

Covariate, levels	Total, <i>n</i> (%)	Question 1 ^a		Question 8 ^b	
		Agree or strongly agree, <i>n</i> (%)	<i>p</i> value	Agree or strongly agree, <i>n</i> (%)	<i>p</i> value
Age					
< 60	54 (51)	33 (61)	.0082	29 (54)	.0208
≥ 60	51 (49)	18 (35)		16 (31)	
Gender					
Female	67 (66)	30 (45)	.3015	29 (43)	.9067
Male	38 (36)	21 (55)		16 (42)	
Race					
White	77 (73)	35 (45)	.2893	30 (39)	.1810
Others	28 (27)	16 (57)		15 (54)	
Education					
Below college	58 (55)	29 (50)	.7449	26 (45)	.6504
Higher than college	47 (45)	22 (47)		19 (40)	

^aQuestion 1: “a doctor dressed formally (with tie and white coat) makes me feel comfortable.”

^bQuestion 8: “a doctor dressed in formal attire (with tie and white coat) impresses me as someone being more professional.”

patients preferred the physician in casual attire, and 38% of patients had no preference of one physician over the other.

Subgroup analysis did not show statistically significant differences or trends among age, sex, marital status, and education level for the compassion, professionalism, and physician preference.

In the end, patients were asked to rate their preferences regarding the two forms of physician attire in an unblinded questionnaire. Table 2 shows the median response from patients regarding the survey questions.

Of the total number of patients, 49% of the total number of patients agreed or strongly agreed with the statement “a doctor dressed formally (with tie and white coat) makes me feel comfortable” (question 1, supplemental online Appendix 1), whereas 43% agreed or strongly agreed with the statement “a doctor dressed in formal attire (with tie and white coat) impresses me as someone being more professional” (question 8, supplemental online Appendix 1).

Subgroup analysis, when dichotomized into two groups (agree or strongly agree vs. others), showed that age was significantly associated with the outcome for both question 1 and question 8. Patients aged 60 years or less were more in favor of the doctor wearing a formal attire as someone who makes them feel comfortable and as someone being more professional (Table 3). Hence, multicovariate analysis was not conducted.

DISCUSSION

We were surprised to find that in this randomized blinded study, patients with cancer did not find a physician's dress code to influence their perception of physician compassion, professionalism, and their physician preference. In previous studies, mainly nonblinded surveys, patients expressed preference for formal attire including lab coat [7, 9]. To our knowledge, this is the first randomized controlled trial conducted in a blinded format that provides robust information regarding the nonverbal aspect of physician-patient

interaction and the physician's communication skills. Evidence from previous studies supporting formal physician attire is limited to open survey research [9]. The methodology (blinded, randomized controlled trial design) and all the tools used in our study are validated. We have found them to be robust in measuring the patient-reported outcomes in similar studies on patients' preferences regarding physician posture [29, 47], style, content and delivery of message [1, 30, 51], and the presence or absence of a computer during the clinic encounter [31]. Our results strongly suggest that in the advanced cancer setting, patients had no preference for formal physician attire.

Many Factors May Influence Attire Preference

It is possible that some patients might perceive the formal attire as an element of respect and professionalism, whereas others may consider this as a way of putting boundaries and distance in front of the patient. Studies coming from Eastern parts of the world also suggest local national dress as a preferred attire when physicians were dealing with social, sexual, and psychological issues [54], whereas in other types of encounters there still remains a preference for physicians wearing Western attire, including the white coat [20]. Given the seriousness of the advanced cancer diagnosis, patients may trend toward preferring a more authentic experience with their physician, including more casual attire. In some previous studies, more professionally and formally dressed physicians have inspired more confidence; however, for many patients the concept of “white coat fear” has been well documented [24]. The nature of the specialty may also play a role. For example, in specialties like surgery, a shirt and tie with a white coat were shown to be the “attire of preference” by patients for their surgeons, creating a positive influence on patients' trust in their surgeon [28]. However, across the corridor in obstetrics and gynecology, patients have been reported to be “equally satisfied with physicians who dress in business attire, casual clothing, or scrub suit” [21].

Open-Label Design of Preference Studies May Introduce Bias

In the open-label phase of our study, we saw similar trends more in line with previous, unblinded research [9]: doctors wearing formal attire were perceived as “making the patient feel more comfortable” and “being more professional” (Table 2). Thus, study design is clearly an important factor to consider when researching patient preferences.

Age May Affect Attire Preferences

Interestingly, in the open-label phase, subgroup analysis showed that patients aged less than 60 years were more likely to prefer formal attire than patients aged at least 60 years. This is contrary to the findings of Petrilli and colleagues in their recent cross-sectional survey [10] as well as in a recent report by Lozic and colleagues from a public hospital in Chile [6], which demonstrated that patients aged more than 60 years were more conservative, perceiving a higher level of expertise and training when formal clothes and white coat were used by the physicians. This suggests that personal likes and dislikes may interfere with the study results when conducted in an unblinded format.

Association of Gender with Attire Preferences

Patients' gender has been linked with their choices of selecting their physicians; however, this has been largely associated with particular specialties, like female patients preferring female physicians for psychosocial counseling, gynecological, obstetric, and urology issues, with similar reports among male patients [54] and no physician-gender preference during emergency department visits [55]. However, both the female and male patients in our study did not show a preference for a particular type of attire (Table 1). This is contrary to findings of Petrilli and colleagues in which participants of both genders indicated an overall preference for formal attire with white coat [10].

Attire, an Easily Modifiable Part of Clinician's Encounter

The results from our double-blind RCT indicate that physicians' attire does not hold significant bearing on the patient's trust and confidence in the outpatient supportive care setting. Clinicians involved in the care of sensitive and distressed populations of patients, particularly those suffering from advanced cancer, sometimes need to be extremely cognizant of how they approach these patients and their families. Given the increasing emphasis of patient preferences related to satisfaction and perceptions regarding quality of care as a focal point for health care providers and systems, consideration of attire may affect the health of the organization. Even more critically, it is of the utmost importance that impeccable attention is provided to details in order to have meaningful interactions. Certain factors in such clinician-patient interactions are unavoidable, like age, sex, race, or in certain situations wearing a specific dress format such as a religious or a cultural garment. However, in general, attire is an easily modifiable form of a clinician's presentation. The results of this study provide reassurance regarding patient perceptions in relation to attire.

It is also prudent to mention here that although studies have reported health care workers' white coats and neckties as potential vectors for patient-to-patient transmission of microbes [56–59], a recent systematic review from Pace-Asciak and colleagues reported weak evidence of contamination of neckties and no evidence of increased risk of health care–associated infections related to attire [60]. It has also been shown that institutional restrictions in wearing coats and ties, as in the “bare below the elbows” policy, did not change rates of hand contamination of doctors working in a general hospital [61].

Limitations of Our Study

In our study, patients were recruited from only one cancer center and consisted of a relatively homogenous population (patients with advanced cancer). Although this has given us insight into our population of interest, it introduces a potential limitation in generalizing our findings. Moreover, we did not have enough patients from certain minorities or different age and racial groups or socioeconomic strata; patient perceptions may vary based on these different demographic, social, and cultural associations. Hence, the results cannot be generalized. Another limitation is the lack of variability in the video intervention, as we only selected white, male physicians for the video intervention. The reason for this was the logistical limitations in designing a randomized controlled trial, in which we were not able to have multiple different arms with gender, racial, and ethnic variations. We also looked at one particular style of attire, “tie and white coat,” and were not able to analyze different other attire patterns including scrubs and/or traditional dresses, including, but not limited to, traditional (cultural, ethnic, or religious) headgear. Therefore, there is an opportunity for further study (research) to more deeply explore attire preferences using our controlled methodology.

CONCLUSION

The physician's attire did not affect the perceptions of patients with cancer receiving palliative care regarding the physician's level of compassion and professionalism. Attire also did not influence the preferences of patients with cancer for their doctor or their trust and confidence in the doctor's ability to provide care. More RCTs are needed in the area of communication skills to specifically characterize and better understand the impact, if any, of different types of attire on palliative care patients' perceptions.

ACKNOWLEDGMENTS

The authors acknowledge the nursing and research staff at the outpatient supportive care center, as well as our patients and their families for participation in this study. The authors also acknowledge the Research Medical Library (Rachel S. Hicklen) at The University of Texas MD Anderson Cancer Center for assistance with the literature search; Dr. Jessica H. Brown, Ph.D., technical writer, and Dr. Aimee E. Anderson, Ph.D., senior research scientist, in the department of Palliative, Rehabilitation, and Integrative Medicine for editorial assistance (no outside funding

was utilized and they did not receive any financial compensation for the contribution); The University of Texas TV team for assistance with selection of professional actors and making the videos; and Elida Galan, Sr., administrative assistant in the department of Palliative, Rehabilitation, and Integrative Medicine for assistance with formatting the figures and tables. The study was funded by internal departmental funds. Partial support was provided by Minjeong Park and Diane Liu, Biostatistics Shared Resources at MD Anderson, National Institutes of Health grant CA16672. This study was presented in part at the American Society of Clinical Oncology Palliative and Supportive Care in Oncology Symposium (PallOnc18), San Diego, CA, November 16–17, 2018, and in part at the annual American Academy of Hospice and Palliative Medicine meeting in Orlando, FL, March 13–16, 2019.

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AUTHOR CONTRIBUTIONS

Conception/design: Ahsan Azhar, Kimberson Tanco, Ali Haider, Minjeong Park, Diane Liu, Janet L. Williams, Eduardo Bruera
Provision of study material or patients: Ahsan Azhar, Kimberson Tanco, Ali Haider, Eduardo Bruera
Collection and/or assembly of data: Ahsan Azhar, Kimberson Tanco, Ali Haider, Janet L. Williams, Eduardo Bruera
Data analysis and interpretation: Ahsan Azhar, Kimberson Tanco, Ali Haider, Minjeong Park, Diane Liu, Janet L. Williams, Eduardo Bruera
Manuscript writing: Ahsan Azhar, Kimberson Tanco, Ali Haider, Minjeong Park, Diane Liu, Eduardo Bruera
Final approval of manuscript: Ahsan Azhar, Kimberson Tanco, Ali Haider, Minjeong Park, Diane Liu, Janet L. Williams, Eduardo Bruera

DISCLOSURES

The authors indicated no financial relationships.

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